

*The Dancing Mouse; a Study in Animal Behaviour.*  
By Robert M. Yerkes. Pp. xxi+290. (New York :  
The Macmillan Company; London : Macmillan and  
Co., Ltd., 1907.) Price 5s. net.

THE most characteristic feature of the best psychology of the present day is the tendency to look for much of the explanation of mental life in its antecedents and surroundings. The older individualistic position is being rapidly left behind. The continuity of mind is now as clearly recognised as the continuity of life. Lower forms of mental activity, in the race no less than in the individual, are found to throw much light upon the nature of developed human consciousness. Such forms are, however, matters of inference, not of direct observation; it is therefore not surprising that the science of comparative psychology is so far from keeping pace with its elder brother, comparative anatomy. The work thus far done has been of a somewhat sporadic nature, in one prominent case, at least, vitiated by faulty psychological theory. More decided progress may be looked for in the application of the experimental method.

Dr. Yerkes's book on the Japanese dancing mouse, the first of a series to be devoted to the study of animal behaviour, is an excellent example of this plan of procedure. A very full description is given of the two principal forms of test employed, viz., the light-discrimination test and the labyrinth test. The former was employed to investigate not only the visual discrimination of the animal, but also its powers of learning by experience and of retaining the lessons thus learnt. As "motive" to the use of the discriminative faculty, Dr. Yerkes employed punishment, in the form of mild electric shocks for mistakes made, considering this not only more humane than the motive of hunger usually employed in such experiments, but also better adapted to the peculiarities of behaviour of the animal, viz., its superabundant activity. Here the criticism at once suggests itself that such a mode of procedure would probably encourage a mechanical production of habit in the animal, and fail to stimulate any germs of higher mental faculty that might be present. The results obtained certainly fail to show the presence of any reasoning power above sense discrimination. Even the inference to power of discrimination may not be completely justified. Sense-differentiation and the mechanical working of hedonic selection would seem able to account for all the facts. Yet the mice might have been capable of higher mental processes, e.g. in terms of kinæsthetic imagery, which the experiments failed to call into operation owing to the insufficiency of the stimulus or motive employed.

Apart from its value as a contribution to science, the book is an extremely readable one, and is, moreover, admirably bound and printed. W. B.

*Studies in the Medicine of Ancient India.* Part i., Osteology, or the Bones of the Human Body. By Dr. A. F. Rudolf Hoernle, C.I.E. Pp. xii+252. (Oxford : Clarendon Press, 1907.) Price 10s. 6d.

SOME time ago, when Dr. Hoernle was preparing an edition of two old Indian medical tracts, preserved in the Bower manuscript of the fifth century A.D., he was surprised to find how little we knew of medicine as taught and practised in Ancient India. The volume under review is the first fruit of a resolve to make good that deficiency in the history of medicine so far as it can now be made good by a study of existing manuscripts and documents. Of the three systems of medicine which have come down to us the most ancient is that ascribed to Atreya, a physician who is assigned by Dr. Hoernle to the sixth century B.C.; the system ascribed to Suśruta, the

surgeon, is nearly as ancient; the third system, that of Vagbhata, the Galen of the mediæval East, as Dr. Hoernle describes him, dates from the seventh century A.D., and is a compound of the two older systems.

Evidently amongst the ancient Indians, as among medical men of to-day, a knowledge of the bones was regarded as fundamental in the study of medicine. In the system of Atreya the number of bones in the human body is given as 360 (the nails, teeth, and tooth sockets are counted as separate bones); in that of Suśruta 300, while in Vagbhata's system they number 360. In modern text-books of anatomy the number of bones is variously estimated from 200 to 214, the number varying according to the inclusion or exclusion of certain small bones and some which are only occasionally present. The ancient Indian anatomist shows an intimate knowledge of animal tissues in classifying the cartilages with bones; he regarded cartilage as an immature form of bone. In the course of transcription the text naturally became corrupt; for instance, in Atreya's system the two humeri, four wrist bones and two eyes (their outer coat was believed to be cartilaginous, hence they were classified as bones) came to be omitted, but the total number of 360 was made good by increasing the number of face and neck bones. In all three systems the thumb is stated to have three joints or phalanges; Dr. Hoernle points out that a similar mistake is made in the summary of bones given in the Talmud. The Talmudic summary, probably derived from the Greek school at Alexandria, follows very closely the systems of Ancient India. How far the systems of medicine amongst the early Greeks and the Ancient Indians were related cannot yet be estimated; thanks to the labours of Dr. Hoernle we know much more of the systems practised amongst the Indians than amongst the Greeks.

Altogether Dr. Hoernle, although not a medical man himself, has laid medical men under a deep obligation to him by rendering so easily accessible the knowledge and practice of physicians who tended the sick in northern India some centuries before Christ was born.

*The Sea-shore, Shown to the Children.* By Janet Harvey Kelman. Described by Rev. Theodore Wood. Pp. xi+146; with 48 coloured plates. (London and Edinburgh : T. C. and E. C. Jack, n.d.) Price 2s. 6d. net.

THIS book belongs to the "Shown to the Children" series, and consists of forty-eight coloured plates with a short description written in the simplest possible language of each of the subjects depicted.

From such an immense choice of material it was no doubt difficult to decide what should be described and what left out, but, on the whole, we think that the choice has been a very good one. The chief objection to the book is the use of English names for most of the objects described. Some of these names are unfamiliar to us, while others are surely local. In some cases the generic name has been used, e.g. Chiton, Purpura, Pinna, Terebella, &c., and we think it would have been an advantage if this system had been more freely adopted, the English names only being used where there could be no doubt whatever as to their being well-known ones. Alcyonium is called "the sea-finger"; in some localities, at least, it is known as "dead men's fingers." Pleurobrachia is called "the sea-acorn," but in another well-known book of the sea-shore its English name is given as "the sea-gooseberry." The name "sea-acorn" is usually applied to a barnacle.

This attempt to give English names to objects not

well known has led to an unfortunate use of the terms caterpillar and chrysalis, which are here applied to the zoëa and megalopa stages of the crab.

We can understand the desire on the part of the author to bring home to the children the fact that the zoëa and caterpillar represent the larval stage in the life-histories of crab and butterfly, and that the chrysalis of the butterfly and the megalopa of the crab are also corresponding stages, but to call a zoëa a caterpillar and a megalopa a chrysalis is carrying comparison too far.

FRANK BALFOUR BROWNE.

*Déviations des Compas.* By Pierre Engel. Pp. vi+64; with 3 plates. (Paris: Gauthier-Villars, 1907.) Price 2.75 francs.

THE brief introduction well describes the subject-matter of the book. It is divided into four parts. The first consists of a theoretical study of the magnetic field of a ship. It is quite simple, and involves no knowledge of mathematics beyond the rudiments of trigonometry. The second part is equally elementary in its treatment, and deals with the action of the field in question on a magnetic needle, together with an outline of the principle of compensation. The third part deals with the compensation of the Thomson or Kelvin compass, while the fourth part consists of various information and remarks, both general and particular, relating to the Thomson compass. Of the plates, the third and fourth are charts of the world showing curves of equal horizontal intensity and equal magnetic inclination respectively. Ensign Engel has produced a book which should be of great use to naval officers, to whom a knowledge of the principles of the modern mariner's compass is indispensable, but to whom a highly mathematical treatment would be prohibitive.

*Bulletin of Miscellaneous Information. Royal Botanic Gardens, Kew.* Pp. 421+152. (London: Darling and Son, 1907.) Price 5s.

THIS volume of the *Kew Bulletin* is the second of the regenerated series. For the most part the contents are connected with systematic or economic botany. Herbarium workers have contributed lists of new flowering plants from Africa and elsewhere, reductions of the Wallichian herbarium, identifications of algae and fungi, and special articles. The rubber boom is reflected in several articles, notably in the accounts of Guayule rubber, obtained from *Parthenium argentatum*, and of Mgoa rubber, the product of the East African tree *Mascarenhasia elastica*. Various additions have been made to the wild fauna and flora of the gardens, the most important being the list of lepidoptera compiled by Mr. A. L. Simmons. Notes on the cricket-bat willow and on gardens and parks in South Wales represent the work of members of the gardens' staff, and articles have been contributed from India and Africa by former members of the staff.

*The Will to Doubt: an Essay in Philosophy for the General Thinker.* By Alfred H. Lloyd. Pp. xi+285. (London: Swan Sonnenschein and Co., Ltd., 1907.) Price 4s. 6d.

THE thesis defended in this, the latest, volume of Prof. Muirhead's ethical library is that doubt is no mere negative of belief, but a positive element absolutely necessary to real life. It is true that the common-sense view of the world is full of contradictions that furnish abundant food for doubt, and that no less must be said of the more special and abstract views which constitute the sciences. But though Prof. Lloyd thus agrees with Mr. F. H. Bradley in holding that our experience at all its levels is "riddled

with contradictions," he does not follow the Oxford philosopher to his famous conclusion that all experience is therefore only of "appearance" and not of "reality." In his view, on the contrary, contradiction actually serves experience by holding it down to the real world which it would otherwise miss. It follows that the "doubter's world" must always present certain positive features which will accord with the principles of Descartes, the typical modern doubter. Among these will be found psychophysical parallelism and "the immortality of whatever is indeed real."

Prof. Lloyd's argument is interesting, and is ably, if not always convincingly, developed, but suffers from his somewhat perverse and strained efforts after brilliance of style. He has, moreover, shown more courage than prudence in choosing a title which inevitably suggests comparison of his work with that of his compatriot, Prof. William James.

#### LETTERS TO THE EDITOR.

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#### An Annotated Copy of Newton's "Principia."

It may interest your correspondent (p. 510) to know that Le Neve, in his "Pedigrees of Knights" (Harleian Soc., 1873, viii., p. 192), states that Sir Demetrius James, of Itham, was knighted on May 10, 1665. An account of the family may be found in Hasted's "History of Kent," vol. ii., p. 247.

Much information about the preparation of the second edition of the "Principia" may be found in Brewster's "Memoirs of Sir Isaac Newton," vol. ii., p. 273 *et seq.*, but it is needless to burden your columns with quotations from so accessible a book. Two specially bearing on the point at issue will suffice:—"Even in November 1702, when he [Newton] was visited by Bd. Greves, who saw in his hands an interleaved and corrected copy of the Principia, he would not acknowledge that he had any intention to reprint it." "In a letter dated October 11 [1709], Newton intimated to Cotes that he had sent him by Mr. Whiston 'the greatest part of the copy of his Principia, in order to a new edition,' thanked him for his letter of the 18th of August, and requested him not to be at the trouble of examining all the Demonstrations, but 'to print by the copy sent him, correcting only such faults as occur in reading over the sheets,' which would entail upon him 'more labour than it was fit to give him.'"

The results of Mr. Smith's further inquiries will be awaited with interest.

W. R. B. PRIDEAUX.  
Reform Club, Pall Mall, S.W., April 2.

#### Proposed Alteration in the Calendar.

WITH reference to the proposed alteration of the calendar so ably discussed by "W. T. L." in NATURE of March 26, it seems to me that the drastic scheme advocated by Mr. Pearce is not only inadmissible because interfering with the continuity of the weeks, but it is not the simplest scheme that could be adopted, even allowing the interference proposed.

The Positivist Calendar agrees with Mr. Pearce's proposal in that it divides the year into fifty-two weeks with a supernumerary day which is not included in any week, and with two such supernumerary days in leap years. The two calendars are also alike in that these supernumerary days are not included in any month. But the Positivist Calendar is the simpler of the two in that it makes all the months of the same length, namely, four weeks; and Blackstone informs us that in law a month means "28 days, unless otherwise expressed."